

CITY OF MARLBOROUGH

Marlborough, MA 01752

DEPARTMENT OF PUBLIC WORKS ENGINEERING AIDE GRADE 2

DEFINITION/PURPOSE

This is sub-professional civil engineering work performed in field and office. Work involves the performance of assigned civil engineering tasks requiring some knowledge and training in civil engineering principles and practices but below the full professional level and responsibility. Work is performed in accordance with standard procedures under supervision of professional engineers who provide necessary instructions and review work for accuracy and completeness. Supervision may be exercised over employees of lesser grade

ESSENTIAL FUNCTIONS

(The essential functions or duties listed below are intended only as illustrations of the various type of work that may be performed. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.)

- Acts as instrument man on preliminary and final surveys and in giving lines and grades on construction work; may assume charge of field parties on small work.
- Sets up, adjusts, and operates level, transit, and other surveying instruments to establish angles and elevations, and to secure data relating to angles and elevations for construction, map making, and similar purposes.
- Assists engineers in field studies to develop layouts of various types of construction, determine maintenance needs, and make preliminary estimates of construction work.
- Assists resident engineers and inspectors on construction work in establishing lines and grades, inspecting work-in-progress, computing quantities, assembling data, and preparing progress reports.
- Assists in taking field notes, keeping records of length, kind of surface and material, and other details of municipal construction.
- Drafts plans and sections from survey notes; performs a variety of sub-professional drafting and tracing duties; assists in making preliminary estimates for construction work and in simpler phases of design work.
- Makes arithmetical and trigonometric computations and calculations; posts and maintains various engineering data and records.
- Prepares, serves, posts notices of hearings on acceptance and betterments; lays out street number cards from approved plans; issues numbers on request.
- Operates survey equipment; gives lines and grades on field surveys
- Assists chief of survey party or supervising engineer
- Drafts plans and sketches
- Conducts traffic counts and other field studies
- Makes preliminary cost estimates
- Performs engineering calculations
- Processes street opening and other permits
- Calculates and records data on projects and surveys

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- Inspects construction projects
- Processes requests for house numbering
- Assists in testing construction materials
- Maintains equipment
- Checks conformance of projects for minority (employment) compliance
- Determines conformance of construction work with plans and specifications
- Reads and interprets maps and charts
- Keeps track of office supplies and processes equipment purchases when needed
- Measures and tracks quantities for payment on construction projects
- Maintains records and City plan/map inventory
- Delivers reports and supplies
- Assists public in obtaining record and plan information
- Writes letters, reports and memoranda
- Makes copies of plans, maps, reports, and other documents
- Participates in snow and ice events during all hours of the day and night
- Performs related works as required.

SUPERVISION RECEIVED

Works under the administrative direction of the City Engineer or the Assistant City Engineer. This employee may also receive direction from the DPW Commissioner and Assistant Commissioner of Operations. Works according to established departmental and city policies and procedures, standards, or directives, instruction and intent.

SUPERVISORY RESPONSIBILITY

Responsible for the supervision of subordinates to ensure compliance with the division and departmental programs including, but not limited to roadway and/or utility design projects, administration of construction contracts, and the road opening permits program.

JUDGMENT

Guidelines, which may be in the form of administrative or organizational policies, general principles, legislation, or directives that pertain to a specific department or functional area, only provide limited guidance for performing the work. Extensive judgment and ingenuity are required to develop new or adapt existing methods and approaches for accomplishing objectives or to deal with new or unusual requirements within the limits of the guidelines or policies.

COMPLEXITY

The work consists of employing many different concepts, theories, principles, techniques, and practices relating to an administrative field. Assignments typically concern such matters as studying trends in the field for application to the work, assessing services and recommending improvements.

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NATURE AND PURPOSE OF CONTACTS

Relationships involve constant interaction with local, state, and federal government officials, community leaders, and any other individuals to protect and promote the organization's overall interest. The position requires a high degree of diplomacy and judgment and must be able to work effectively with, and influence, all types of persons. Duties require a well-developed sense of strategy and timing in representing the organization effectively in critical and important situations that may influence the well-being of the organization.

CONFIDENTIALITY

The employee has regular access at the departmental level to a variety of sensitive and confidential information.

WORK ENVIRONMENT

Work is performed indoors and outdoors in varying weather conditions. Outdoors, employee may be exposed to equipment/machinery, noise, odors, dust, heat and cold, oil, dirt or grease, and risk of personal injury. Indoors, employee operates in an office environment with typical office equipment.

EDUCATION AND EXPERIENCE

Two years of full-time, or equivalent part-time, technical or professional experience in civil engineering work in such areas as construction, surveying, hydraulics, design, transportation, structural, materials, sanitary, environmental, soils, drafting, highway, or any equivalent combination of such experience and the substitutions given below.

Substitutions: An undergraduate degree with major in Civil Engineering or Civil Engineering Technology may be substituted for the required experience on the basis of one year of such education for six-months of the required experience.

Special Requirements: Possession of a valid Massachusetts motor vehicle operator's license is required.

KNOWLEDGE, ABILITY AND SKILLS

Knowledge: Working knowledge of the principles and practices of land surveying and engineering drafting. Working knowledge of inspection procedures for engineering construction and of materials used in this work. Some knowledge of municipal construction principles and practices. Working knowledge of basic mathematics including algebra and geometry. Working knowledge of the principles and practices of basic engineering field surveying. Working knowledge of terminology, symbols, codes and standard abbreviations used in civil engineering work. Working knowledge of computer and engineering/CAD hardware and software. Working knowledge of hand and computer drafting techniques and instruments

Ability: Ability to make accurate engineering computations and calculations of a moderately complex nature. Ability to adjust and operate engineering levels and transits and to use measuring tapes and rods. Ability to read and interpret plans maps and specifications. Ability to make accurate observations of construction work and to determine conformance with plans and specifications. Ability to

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understand and follow written and oral instructions of moderate complexity. Ability to establish and maintain effective working relationships with engineering personnel, contractors, and the public. Ability to code and arrange data according to a given order or procedure. Ability to read, interpret and apply technical literature, laws, rules, regulations, descriptions, blueprints, plot plans, topographic maps, etc. related to civil engineering. Ability to use appropriate formulae in determining exact locations and measurements (lines, grades, areas, etc.). Ability to interpret and apply written instructions. Ability to operate reprographic equipment; and ability to deal tactfully and professionally with the public, contractors, design professionals, and co-workers.

Skills: Skill in the use of surveying and drafting instruments. Excellent oral and written communication skills, strong interpersonal skills, problem solving skills.

PHYSICAL, MOTOR AND VISUAL SKILLS

Physical Skills: The work involves physical skills typical of an office environment, including sitting, standing, walking and stooping. May be required to use hands to operate objects, tools, or controls, and reach with arms to pick up objects. Candidate must occasionally lift and/or move objects weighing up to thirty pounds. lift objects such as files, boxes of papers, office supplies, and office equipment weighing up to thirty (30) pounds. Candidate must be able to access and negotiate all levels of a construction site.

Motor Skills: The work may require motor skills for activities such as moving objects, using office equipment, including but not limited to telephones, personal computers, handheld technology, and survey equipment.

Visual Skills: Visual demands require routinely reading documents for general understanding and analytical purposes and frequent computer usage. Candidate must have vision and hearing at correctable to normal ranges.